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ABSTRACT

Suggesting that a missing link between effective practices and their sustained implementation is the "host environment" into which practices, programs, procedures, and pedagogy are translated, this bulletin describes the need for prevention and intervention models in beginning reading that are anchored to the school as the host environment. The model is developed at the school-building level for a particular host environment and for the long term; anchored to ongoing student performance in priority subject areas; customized by collaborative grade-level teams to fit and take hold at the school-building level; and tethered to a centralized data-management system. The paper contains three major sections: (1) a conceptual framework for understanding and mapping the complex and multiple contexts of schools; (2) a set of "big ideas" for designing effective beginning reading instruction for students in kindergarten through grade 3; and (3) the features of a school-wide intervention model customized for beginning reading. Contains several unnumbered figures and 66 references. (RS)

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Beyond Effective Practice to Schools as Host Environments:

Building and Sustaining a School-wide Intervention Model in Beginning Reading

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Beyond Effective Practices to Schools as Host Environments:

Building and Sustaining A School-wide Intervention Model in Beginning Reading for All Children

Introduction

Our knowledge of effective practices for improving the academic achievement of students in the primary and elementary years has increased dramatically in the last decade (Simmons & Kameenui, in press; Stringfield, in press). However, implementing an effective practice in one classroom or in a research context is very different from implementing and sustaining effective practice at the school-building level. There is a great deal of collective wailing in the field these days about the feeble attempts to translate research into effective practice (Malouf & Schiller, 1995) that improves reading achievement in students who are at serious academic risk.

In this monograph, we acknowledge the limitations to improving student achievement when curriculum reform focuses primarily on the collection, adoption, and implementation of effective practices and programs. A missing link between effective practices and their sustained implementation is the "host environment" (Zins & Ponti, 1990, cited in Sugai & Horner, in press) into which practices, programs, procedures, and pedagogy are translated. Too often, curricular implementation and accommodation efforts fail to mirror the complexities of schools (Hedges & Waddington, 1993). We describe, instead, the need for prevention and intervention models that are anchored to the school as the "host environment." We describe a model that is (a) developed at the school-building level for a particular host environment and for the long term, (b) anchored to ongoing student performance in priority subject areas (e.g., reading, mathematics), (c) customized by collaborative grade-level teams to fit and take hold at the school-building level, and (d) tethered to a centralized data-management system. Naturally, curricular and instructional change are not content free and involve important subject matter, such as reading, mathematics, social studies, and science. An important aspect of this school-building intervention model is the design of subject matter curricula.

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Beyond Effective Practices to Schools as Host Environments:

Building and sustaining a School-wide Intervention Model in Beginning Reading for All Children

Overview

This monograph contains three major sections:

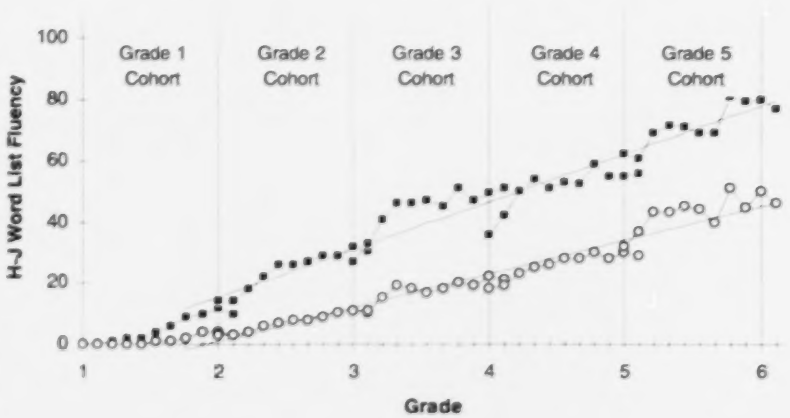
- A conceptual framework for understanding and mapping the complex and multiple contexts of schools.
- A set of "big ideas" for designing effective beginning reading instruction to students in kindergarten through grade 3.
- The features of a school-wide intervention model customized for beginning reading.

It is our hope that readers will gain from this monograph a sense of the genuine complexity of building and sustaining an intervention model that is tailored to the needs of individual schools. Our description admittedly includes the conceptual and theoretical facets that undergird such work, but we also address the practical considerations of designing an intervention model that is feasible, sustainable, and effective in addressing the needs of ALL children in the complex host environment of a school.

A Profile: Early Learning Trajectories Predict Future Performance

In an elementary school of a suburban school district in Tigard, Oregon, Joshua, a seven-year-old child, exits first grade reading two correct words per minute and scoring at the 9th percentile on a standardized measure of receptive vocabulary. He cannot read the words *mom* or *and* or identify pictures that represent the meanings of *group* or *pair*. Allison, an eight-year-old Latina student, is repeating second grade in a rural school in Springfield, Oregon. She reads two words correctly per minute but scores in the 93rd percentile on a standardized measure of receptive vocabulary development. Like Joshua, she cannot decode the most basic words, but her vocabulary knowledge is significantly above her average, same-age peers. These incomplete, yet sobering profiles of two children in Oregon are representative of many children in the United States who are struggling with beginning reading in their early school years. These isolated accounts of children's emerging reading difficulties do far more than tell us about the current state of their reading and academic competence. Longitudinal research indicates that without intensive, strategic, and timely intervention, these data points reliably predict the future academic performance of children like Joshua and Allison (Juel, 1988).

A common denominator among children with reading difficulties is a trajectory of progress that (a) diverges early from their peers who are learning successfully, (b) is stubbornly resistant to change following grade 3, and (c) becomes increasingly discrepant from their peers over time (Felton & Pepper, 1995; Good, Simmons, & Smith, 1998). These features of early performance trajectories are depicted in the following graphic (Good, Simmons, & Smith, 1998) in which two increasingly discrepant trends of reading performance are identified. This graphic makes obvious what is compelling in the research on beginning reading (Felton & Pepper, 1995; Juel, 1988), that students who begin in the *bottom* trajectory almost never become students who are average readers and in the *top* trajectory. Students identified as poor readers in first grade remained poor readers in fifth grade. As Carnine



(1997) so keenly observed, the essential question that educators must grapple with is not whether children are learning, but whether they are learning enough! In contrast to the lower trajectory, the upper trajectory of this graphic indicates that children who were on an early positive reading trajectory stayed on a positive reading path.

Although the above graphic offers a poignant picture of the ever-increasing gap between the performance of students at risk for later academic achievement and their same-age peers who are excelling, the picture is deceiving for two reasons:

1. It focuses exclusively on student performance and is likely to convey that the real problem resides singularly with the student.
2. The graphic represents only one "context" (i.e., the learner context) of the learning, teaching, and schooling process (Carroll, 1963, 1989; Mosenthal, 1984) and fails to adequately mirror and capture the genuine complexities of changing student performance in "real-world" classrooms and schools.

As Mosenthal (1984) noted more than a decade ago, there is not "one ideal and absolute geometry" but multiple geometries or contexts to understanding and improving the teaching and learning space (p. 206).

IMPROVING READING PERFORMANCE IN COMPLEX HOST ENVIRONMENTS CALLED SCHOOLS

While student performance is the bottom line, it doesn't take place in a vacuum or a singular context. Instead, improving the reading trajectories of students like Joshua and Allison takes place in a complex "host environment" (Zins & Ponti, 1990, cited in Sugai & Horner, in press) of classrooms and schools that involves professionals, policies, programs, and practices that interact in complex ways. At least three important reasons suggest why effective practices, programs, and accommodations have not been adopted or sustained in general school settings.

- First, interventions including curricular programs or specific strategies tailored to address a particular problem (academic or behavioral) are too often adopted and implemented before an assessment is conducted of the contextual fit between the intervention and the "host environment" (e.g., school, classroom).
- Second, an intervention is frequently adopted before a formative and continuous feedback loop is established at the "school-building level" that provides priority information on the effectiveness of an intervention in a timely manner.
- Third, a new intervention is invariably adopted for the short term and not the long haul. The newly adopted intervention is not embraced and conceptualized as a "primary" program of prevention and intervention from the very outset, and it is not adopted with specific contexts and host environments in mind.

A Conceptual Framework for Developing a School-wide Reading Intervention Program in the Early School Years

To develop an intervention program to accelerate and sustain the reading performance of children like Joshua and Allison in a complex host environment of a school, it is essential to consider the multiple contexts of such an environment. The conceptual framework for our thinking about building sustainable programs of intervention in complex school environments is derived from Mosenthal's (1984) "contexts pyramid model" which he first applied to "designing training programs for learning disabled children" (Mosenthal, 1982). A simplified version of this context pyramid model is presented in Figure 1 and consists of five contexts — the situation organizer or teacher, setting, materials, task, and learner. This model implicitly suggests that one cannot define one context without involving other contexts. While other contexts and forces (e.g., state funding of schools, national and state curriculum and assessment standards, publishers and developers of curricula, family structure) certainly influence the schooling, teaching, and learning process (Carroll, 1963, 1989; Hodgkinson, 1991; Stringfield, in press), we focus on each of Mosenthal's five contexts to simplify and unpack the complexities of accelerating and sustaining reading achievement in schools.

SETTING CONTEXT: THE SCHOOL BUILDING AND

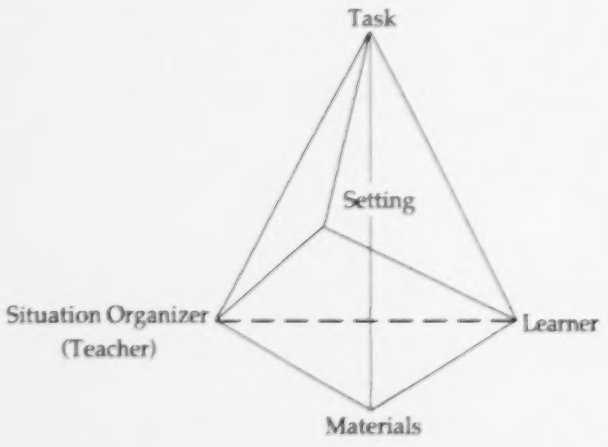


FIGURE 1. THE CONTEXTS PYRAMID MODEL OF READING

SCHOOL DISTRICT AS HOST ENVIRONMENTS

The configuration of the five contexts in Mosenthal's model changes dramatically depending on the setting. If the setting is a small-group, pull-out classroom, or one-to-one tutoring, then other contexts (e.g., *situation organizer, task, materials*) differ more than if the setting is a general education classroom. We have identified three primary setting contexts as important to accelerating and sustaining student academic achievement — the school, the general education classroom, and the particular learning arrangement (e.g., whole class, large group, small group, or one-to-one). From our perspective, the district and school contexts serve as the "host environments" necessary to support the other contexts of setting (e.g., classroom), teacher, task, and materials. As Zins and Ponti (cited in Sugai & Horner, in press) note, "A program consisting of potent and validly conceived mechanisms and processes may not succeed because the host environments are not able to support those processes" (p. 24, emphasis added). According to this perspective, an intervention is only effective to the extent that an environment is able to support it and ensure its sustainability. Likewise, the "best practices" of any profession are not gained in a vacuum, but are implemented and sustained in environments that must intentionally support, enhance, and sustain those practices and commitments.

For example, one could argue that in order for an intervention (program, strategy, innovation) to have the broadest impact and gain hold in a school, school district support of the intervention is necessary, because the school district is ultimately the primary "host environment." In the absence of school district commitment, practitioners and administrators at the school-building level are not successful in shaping a host environment necessary to support effective programs for the long term. Clearly, however, the primary setting context of intervention is the school building, not the school district, for obvious reasons.

Educational reform and change appear to be taking place at the school-building level. Goals 2000: Educate America Act calls for dramatically reforming "our schools by establishing high academic and occupational standards" (p. 1). New designs for school change supported by the New American Schools Development Corporation (NASDC) and the Annenberg Grants, coupled with ambitious school-wide reform models such as Sizer's Coalition for Essential Schools, Comer's (1988) School Development Project, and the growing popularity of Success for All (Slavin, Madden, Dolan, & Wasik, 1996) make it clear that change is at the school level (Fashola & Slavin, 1996; Stringfield, in press). States such as Texas have "Spotlight Schools" with diverse ethnic and socioeconomic student populations that serve as models of success in early elementary reading. In addition, federal agencies currently sponsor research to identify high-performing schools and to examine factors that contribute to the success of students with disabilities and at-risk learners in these "Beacon Schools of Excellence." This approach to effecting change, at least in the primary and elementary grades, recognizes the importance of building and sustaining the "organizational capacity" at the school level to support and sustain effective and comprehensive programs for the long term.

For effective interventions and programs to take hold in a host environment, the school must behave like a "high-reliability organization" (Stringfield, in press) whose main characteristics include (a) a clear understanding of the school goals and a strong sense of mission; (b) the perception that failure to achieve the organization's goals is unacceptable; (c) successful early detection and regular monitoring of student performance in basic school subjects; (d) development of powerful databases on dimensions relevant to achieving school goals; (e) constant training and retraining; and (f) serious and professional performance evaluations. Naturally, interventions will take immediate hold in the classroom context, and curricular, assessment, and classroom interventions should be tailored to each classroom.

SUMMARY OF SETTING CONTEXT: THE SCHOOL

- The school appears to be the primary unit of intervention for improving achievement.
- The school is the primary host environment for sustaining potent intervention mechanisms and processes.
- Schools must behave like high-reliability organizations.

SITUATION ORGANIZER OR TEACHER CONTEXT: THE PRIMARY CHANGE AGENT

The portrait of the typical American classroom is changing dramatically. Some of the changes indicate that a growing number of students, including those with disabilities, may not acquire basic, fundamental, academic skills and strategies. Perhaps never before have the demographics of an individual classroom presented such complex and diverse demands on teachers as the primary agents of instructional change. Teachers and other school personnel responsible for addressing the unique and varying needs of learners may find the complexity unwieldy in the face of growing class sizes and reduced instructional support.

It appears that teachers and classrooms in general education are not prepared to address the learning and curricular needs that children with disabilities and other diverse learners (e.g., students for whom English is a second language) bring to classrooms (Baker & Zigmond, 1990), in spite of the expanding knowledge base of effective instructional approaches (Simmons, Kameenui, & Chard, 1998). The effectiveness of an intervention in part depends on the teacher's technical knowledge and skills in pedagogy and subject matter (e.g., reading, mathematics, science), enthusiasm, decision making, teaching experience (Dill & Associates, 1990), and beliefs and assumptions about teaching and learning (Schumm, Vaughn, Gordon, & Rothlein, 1994).

In addition to the importance that teaching experience, knowledge of effective instructional practices, and classroom organization have on student performance, teachers' general teaching efficacy, personal teaching efficacy (Gibson & Dembo, 1984; Hoy & Woolfolk, 1990), and instructional teaching efficacy (Chard, Kameenui, & Coladarci, 1993) also appear to be important. General teaching efficacy refers to a teacher's sense that a normal teacher's course of action could have a positive influence on student achievement. In contrast, personal teaching efficacy refers to a teacher's confidence in effecting instructional change.

Chard, Kameenui, and Coladarci (1993) have field tested an inventory that assesses teachers' instructional efficacy, that is, teachers' perceptions of their ability to perform specific instructional behaviors that are likely to result in success for students. Smylie (1988) reported that teachers' perceptions of their ability to directly affect student performance is a promising correlate of teachers' willingness to change. He also reported that the proportion of low-achieving students in a classroom had a negative direct effect on personal teaching efficacy. As the number of low-achieving students increased, teachers perceived they were less able to influence student achievement. Finally, Smylie (1988) found that personal teaching efficacy was related positively to a teacher's "certainty of practice"; that is, teachers more certain of their practice were more likely to adopt curricular changes. Creating a host environment that includes effective practice and tools (certainty of practice) and professional support should increase teachers' personal and instructional teaching efficacy and sustain accelerated academic achievement.

SUMMARY OF SITUATION ORGANIZER CONTEXT: THE TEACHER

- The demographics of classrooms impose complex demands on teachers.
- Teachers in general education classrooms are not adequately prepared to address the learning and curricular needs of diverse learners.
- A concentration of low-achieving students in a classroom has a negative effect on teacher efficacy and requires effective instructional practices and tools.

LEARNER CONTEXT: DIVERSE LEARNERS AND THE TYRANNY OF TIME

Over the past 20 years, the proportion of diverse learners in America's schools — children of poverty, students with disabilities, students for whom English is a second language (Hodgkinson, 1991, 1992) — has grown dramatically. Today more children with disabilities and diverse learning needs are being educated in general education than ever before (Kameenui & Carnine, 1998; McLeskey & Pacchiano, 1994). Estimates of the range of instructional levels in general education already are high, with more than five grade levels per classroom in some schools (Jenkins, Jewell, Leceister, Jenkins, & Troutner, cited in Fuchs & Fuchs, 1994).

This significant heterogeneity in instructional levels in a classroom requires that we attend to learning characteristics of diverse learners if we are to improve their learning. Baker, Kameenui, and Simmons (1998) identified four important learning characteristics that differentiate students with disabilities and those at risk for academic difficulties from average achievers: memory skills, learning strategies, vocabulary knowledge, and language coding.

In general, it appears that diverse learners are more alike than different from their average-achieving peers in learning characteristics. Specifically, for the vast majority of diverse learners, memory skills seem to be intact at the point of receiving information from the environment (Baker, Kameenui, & Simmons, 1998). While some problems at this stage may be attributable to problems in attention, they do not appear to seriously impair performance on memory tasks (Swanson & Cooney, 1991). The primary differences between diverse learners and average achievers have been found in how information is organized in working memory and retrieved from storage in long-term memory (Mann & Brady, 1988; Torgesen, 1985). Moreover, differences in background knowledge and experience with language (e.g., vocabulary knowledge, early experience with language and speech) appear to account for the significant gap between diverse learners and

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average achievers. For example, large vocabulary differences exist between diverse learners and average achievers in terms of the number of words known and depth of vocabulary knowledge. These vocabulary differences appear very early in development and increase over time.

For example, it appears that average achievers learn approximately 3,000 new vocabulary words a year providing they read an average of 500,000 to a million words of running text a school year (Nagy & Herman, 1987). This vocabulary growth appears to be the direct result of wide and independent reading and not the result of any direct or intentional instruction in vocabulary. Diverse learners with reading difficulties are not likely to engage in much independent reading, and as a result, their vocabulary knowledge will not increase at a rate remotely close to that of average achievers. The harsh reality is very clear — if you don't read, your vocabulary knowledge doesn't increase, and you fall farther and farther behind your average or above-average peers who are voracious readers increasing their vocabulary knowledge at a rapid pace.

More than three decades ago, Carroll (1963) suggested that student learning was based on (a) characteristics of the learner, (b) the time devoted to learning an objective, and (c) the quality of instruction. In addressing learning problems, it is fair to assert that educators tend to focus primarily on the "learner," even though variables within the learner are the most resistant to change, because these variables are unobserved, private, and entirely outside the province of teacher influence. The second factor, time devoted to learning, is limited by the number of hours in a school day and the range of objectives and activities in the curriculum. Although efficiencies can be achieved to make instructional time more effective, instructional time is often a fixed variable.

As noted in our example of vocabulary learning, diverse learners and children with disabilities

> ...constantly face the *tyranny of time* in trying to catch up with their peers, who continue to advance in their literacy development. Simply keeping pace with their peers amounts to losing more and more ground for students who are behind... The pedagogical clock for students who are behind in reading and literacy development continues to tick mercilessly, and the opportunities for these students to advance or catch up diminish over time (Kameenui, 1993, p. 379, emphasis added).

Such a dilemma requires teachers to either (a) teach "more in less time," which is not an enviable proposition for teachers or (b) identify and prioritize the most essential subject matter to teach in the fixed and limited time available. In this case, teachers are ostensibly teaching "less" but in a more thorough and diligent fashion (Kameenui & Carnine, 1998). Playing "catch up" in school requires using time and every learning opportunity judiciously, strategically, and preciously. Moreover, playing catch up exacts an enormous cost on students, teachers, administrators, and parents, and gains are not likely to occur unless the pedagogical machinery is precisely tuned, performance based, instructionally oriented, and almost free of instructional and curricular error. Finally, the opportunities for these students to advance or catch up diminish greatly over time, and the cognitive and emotional fatigue in trying to catch up is high. Given the extraordinary challenges inherent in playing catch up, it is not surprising that the best strategy is not to get behind in the first place, but to intervene early, frequently, and purposefully in order to get ahead and stay ahead.

The final factor, quality of instruction, has the greatest potential to affect the needs of students with diverse learning needs. Quality of instruction is influenced by the quality of instructional tools and materials available to teachers and the "architectural design" of the curriculum (Simmons, Kameenui, & Chard, 1998).

SUMMARY OF LEARNER CONTEXT

- The range of instructional levels in a classroom is high, with more than five grade levels per classroom in some schools.
- The primary differences between diverse learners and average achievers is in how information is organized in working memory and retrieved from storage in long-term memory.
- Diverse learners face the "tyranny of time" in trying to catch up with their peers, and teachers are faced with teaching more in less time or teaching less more thoroughly.

TASK AND MATERIALS CONTEXT: USING SMART TOOLS

The learner context suggests that learning tasks and materials are potential sources of difficulty. Observational and self-report data indicate that the type and quantity of instructional adaptations in general education are insufficient to effect "optimal growth" for many low-performing students in general education (Zigmond, et al., 1995). Curricular adaptations and accommodations require substantial teacher time and knowledge of the architectural design requirements of instruction. Moreover, adaptations and accommodations are difficult to sustain. In contrast to piecemeal accommodations, commercial reading and mathematics curricula clearly claim a stable and influential role on academic achievement in general education classrooms (Baker & Zigmond, 1990; Jitendra & Kameenui, 1988; Chard, Simmons, & Kameenui, in

press). Commercial curricula have had a lasting and influential impact on American classrooms (Armbruster & Ostertag, 1993; Hoffman et al., 1994; Kameenui & Griffin, 1989; Porter, 1989; Simmons & Kameenui, 1996). In reading, for example, more than 90% of classroom instruction is based on commercial educational materials and specifically the basal reader (Komoski as cited in Kameenui, 1993). Mayer, Sims, and Tajika (1995) recently noted that textbooks may actually serve the role of a "national curriculum" (p. 456) because of their wide-scale adoption and influence.

To initiate and sustain curriculum change at the school-building level that holds any promise of improving student performance, it is essential that schools and teachers adopt and implement research-validated commercial curriculum programs in reading and mathematics, for example, as the primary foundation of a school-wide intervention. Accommodations and adaptations of existing curriculum materials are important and necessary. However, experience instructs us that in the absence of effective, research-based commercial basal programs in reading as *a first-step option and foundation*, accommodations and adaptations of curricula are not effective for students with disabilities or at risk of academic problems. Curriculum adaptations are also not sustainable in the long run for teachers and students. It is simply unfair and naive to ask general and special education teachers to continuously make accommodations in the absence of an effective curriculum program, especially in reading and mathematics in grades K-3.

SUMMARY OF TASK AND MATERIALS CONTEXTS

- Instructional adaptations are insufficient to effect "optimal growth" for low-performing students in general education and require substantial teacher time and specialized knowledge.
- Research-validated commercial curriculum programs in reading should serve as the primary foundation of a school-wide intervention model.
- Not all curriculum programs are created equal, and it is essential to attend to the design of the programs.

SUMMARY OF CONCEPTUAL MODEL: THE MULTIPLE CONTEXTS OF HOST ENVIRONMENTS

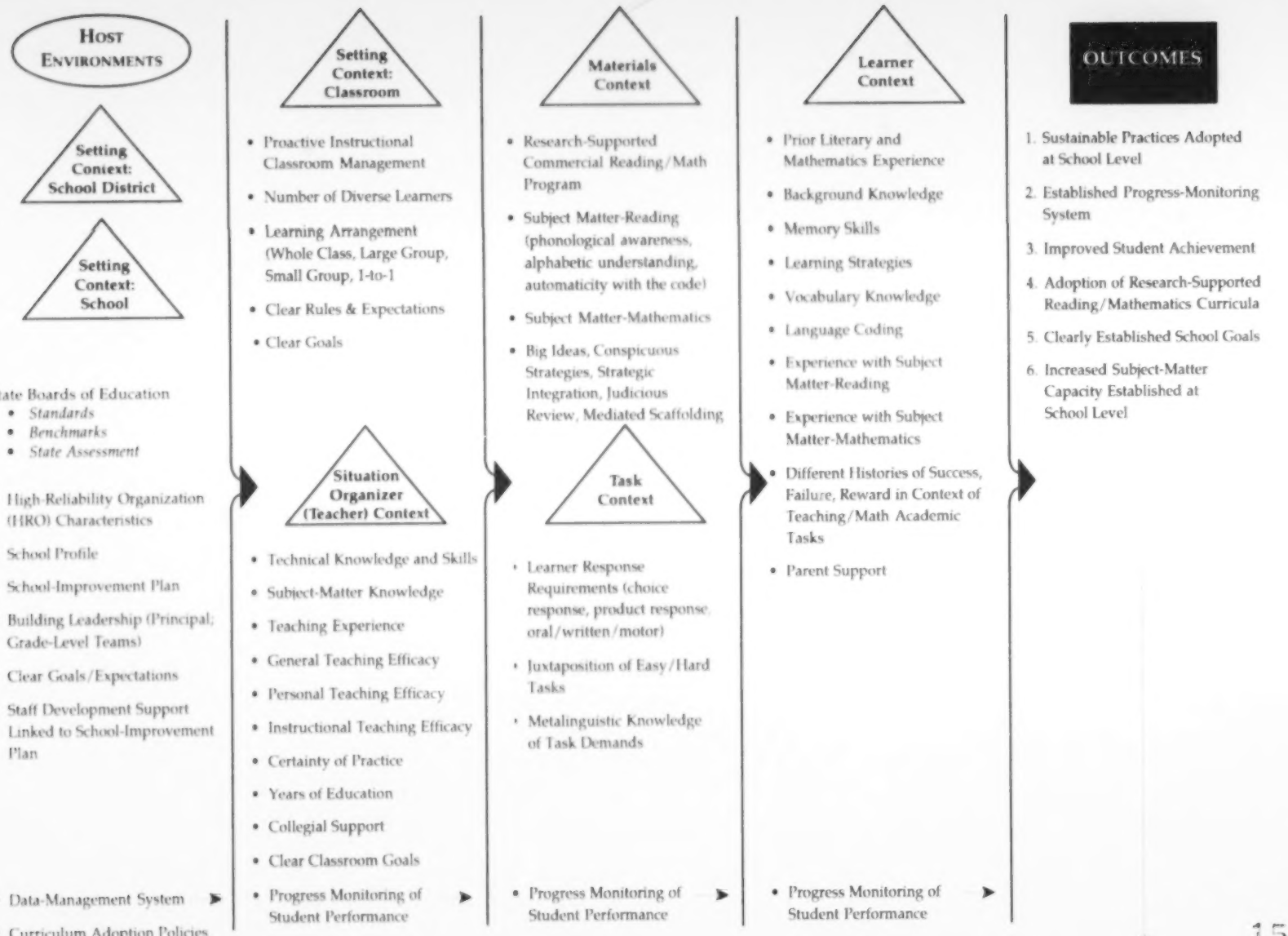
The features of each of the five contexts are included in our model because they are research based; that is, these features have been identified in valid and trustworthy research as contributing, either directly or indirectly, to the improvement of student achievement. The model allows school personnel and stakeholders (teachers, administrators, site-based council members, parents) to represent and examine the full range of instructional, organizational, and administrative features and strategies. In Figure 2, the features of each of the *five contexts* (e.g., setting contexts of the school district, school, and classroom; situation organizer context; materials context; task context; and learner context) and the resulting "outcomes" (see darkened rectangle) of the combined contexts are described. Specifically, the features of the host environments (see oval figure in first column), which include the setting contexts of the school and school district (see triangle in first column), are delineated and include curriculum standards and benchmarks, state-wide assessment requirements, the characteristics of high reliability organizations, school profile, school-improvement plan, building leadership, clear goals and expectations, staff development support linked to school-improvement plan, curriculum adoption policies, and a data-management system. One feature of all contexts is a data-management system, which operates in a context like the classroom as a system for monitoring student progress in a particular subject matter, such as reading.

The anticipated outcomes of a complete analysis of the features of the five contexts as portrayed in Figure 2 include: (a) sustainable practices adopted at the school level, (b) an established progress-monitoring system, (c) adoption of research-supported reading or mathematics curricula, (d) clearly established school goals, (e) increased subject-matter capacity at the school level, and (f) improved student achievement.

Applying the Conceptual Model to School-wide Improvement

Our discussion of school improvement, thus far, has been relatively "content free." That is, we have defined and discussed principles and strategies in broad terms to illustrate their generalizability. In this section, we apply the contextual model analysis to real problems in a real school to illustrate its application. The problem we profile is a recognizable one, for its long-term impact touches more than 40% of adults in the United States, and its immediate impact is obvious in approximately one in six students who fail to develop adequate reading skills in the early grades. Before we describe this real-world application, we examine the important role that beginning reading plays in developing a school-wide intervention model.

The architectural requirements of beginning reading are not readily apparent. The act of actually "reading" in an "alphabetic writing system," which is required of anyone who speaks and reads English, involves a myriad of complex skills, knowledge, and experiences. The act of actually teaching someone to read in the alphabetic writing system, not


HOST ENVIRONMENTS
Setting Context: School District
Setting Context: School
State Boards of Education
• Standards
• Benchmarks
• State Assessment
• High-Reliability Organization (HRO) Characteristics
• School Profile
• School-Improvement Plan
• Building Leadership (Principal; Grade-Level Teams)
• Clear Goals/Expectations
• Staff Development Support Linked to School-Improvement Plan
• Data-Management System
• Curriculum Adoption Policies
Setting Context: Classroom
• Proactive Instructional Classroom Management
• Number of Diverse Learners
• Learning Arrangement (Whole Class, Large Group, Small Group, 1-to-1
• Clear Rules & Expectations
• Clear Goals
Situation Organizer (Teacher) Context
• Technical Knowledge and Skills
• Subject-Matter Knowledge
• Teaching Experience
• General Teaching Efficacy
• Personal Teaching Efficacy
• Instructional Teaching Efficacy
• Certainty of Practice
• Years of Education
• Collegial Support
• Clear Classroom Goals
• Progress Monitoring of Student Performance
Materials Context
• Research-Supported Commercial Reading/Math Program
• Subject Matter-Reading (phonological awareness, alphabetic understanding, automaticity with the code)
• Subject Matter-Mathematics
• Big Ideas, Conspicuous Strategies, Strategic Integration, Judicious Review, Mediated Scaffolding
Task Context
• Learner Response Requirements (choice response, product response, oral/written/motor)
• Juxtaposition of Easy/Hard Tasks
• Metalinguistic Knowledge of Task Demands
• Progress Monitoring of Student Performance
Learner Context
• Prior Literary and Mathematics Experience
• Background Knowledge
• Memory Skills
• Learning Strategies
• Vocabulary Knowledge
• Language Coding
• Experience with Subject Matter-Reading
• Experience with Subject Matter-Mathematics
• Different Histories of Success, Failure, Reward in Context of Teaching/Math Academic Tasks
• Parent Support
• Progress Monitoring of Student Performance
OUTCOMES
1. Sustainable Practices Adopted at School Level
2. Established Progress-Monitoring System
3. Improved Student Achievement
4. Adoption of Research-Supported Reading/Mathematics Curricula
5. Clearly Established School Goals
6. Increased Subject-Matter Capacity Established at School Level

surprisingly, also requires important technical knowledge and skills, many of which are not readily obvious to teachers, administrators, parents, and publishers and developers of commercial reading programs (Kameenui, 1996).

THE ROLE OF SUBJECT MATTER IN THE CONCEPTUAL MODEL: BEGINNING READING

Every educator knows that reading is the most important skill taught in elementary school. Reading failure is overwhelmingly the most important reason that children are retained, referred for special education services, or given long-term remedial supports. Poor readers are heavily represented among high school dropouts, delinquents, and incarcerated youth and adults (Slavin, 1998). The number of children who are poor readers is debated, but one estimate is that 40% of all nine-year-old students in the United States read below basic levels, and one in six students has significant reading difficulties (Slavin, 1998; Lyon & Chhabra, 1996). Reading is the primary academic problem of 80-85% of the 2.5 million students with identified learning disabilities. In addition to research defining the magnitude and stability of reading difficulties among children in grades K-3, more than 30 years of research provides compelling and converging evidence as to what is necessary to teach children who have learning disabilities or difficulties learning to read (Lyon & Chhabra, 1996). Moreover, an emerging and substantial body of intervention research provides reliable parameters for determining the components of effective early reading instruction (e.g., Simmons & Kameenui, in press).

READING AS A COMPLEX PROCESS. Reading is complex to learn and equally complex to teach. What is particularly intriguing and elusive about reading, however, is that despite its complexity, skillful reading looks like a fairly easy and natural thing to do. After all, most people read with what appears to be little or no effort at all. But the "appearance" of reading unwittingly masks the very real and complex processes involved in the act of reading. The truth about reading is that learning to read is anything but natural, and it requires deliberate human intervention and context (Kameenui, 1996). It is important to understand the nature of the English language and the alphabetic writing system in order to appreciate the complexities associated with learning to read and the teaching of beginning reading.

First of all, learning to read does not come naturally, like learning to speak; while almost all children learn to speak naturally, not all children learn to read (Liberman & Liberman, 1990; Pinker, 1984; Perfetti & Zhang, 1996). It is plain that if learning to read was as natural as learning to speak, then for all practical purposes, almost every child in the United States would read as easily as he or she speaks or walks. Because this doesn't happen, two very important but elusive aspects of learning to read are revealed: First, learning to read is "learned," and though many children appear to learn naturally and easily, most children will learn to become skillful and imaginative readers through instruction that is purposeful and considers the complexities of the process. Second, learning to read English requires that a reader learn how the alphabetic writing system is used to convey ideas through symbols (Adams, 1990; Perfetti & Zhang, 1996). Children born and raised in Italy, Hungary, Russia, and Korea must also learn an alphabetic writing system and how it works. In an alphabetic writing system, children must learn to convert the alphabetic print into messages (Adams, 1990; Perfetti & Zhang, 1996), unlike children who learn a writing system based on syllables or logographs.

THE ALPHABETIC WRITING SYSTEM. The constraints of "learning to read" in an "alphabetic writing system" require deliberate perspective. Certainly, the goals of learning to read can be both broad and specific. For example, the purposes of reading include getting meaning from text, becoming an independent reader and thinker, and enjoying unbounded imagination, creativity, and passion. However, in a more narrow sense, to derive meaning from a poem or story requires that a reader confront and make sense of the graphic symbols in the alphabetic writing system. In short, the reader must read the words, and to read the words, he or she must identify the individual squiggles (graphemes or alphabetic letters) on the page that make up the individual words and associate those squiggles with specific sounds (phonemes). Furthermore, a reader must do all this with fluency and a keen apprehension of the purpose and importance of reading. Becoming a fluent, imaginative, and skillful reader requires extensive engagement with the English language — listening to words and to the sounds inside the words; hearing and talking about stories; gaining facility with the concepts of print (e.g., knowing that a book has a front and back and that words are read from left to right); understanding the sounds that make up our language; manipulating the sounds of our language and relating the specific sounds to printed letters and words; connecting words with events, actions, things, and ideas; learning about the connection between sounds, letters, syllables, words, and concepts; and becoming more mindful of the relationship of what is read in newspapers, books, and stories to the human condition.

Reading as a process is fundamentally more than it appears to be. What comes naturally to most children is obviously more than the sum of its parts, but the parts are intricate, complex, and absolutely essential to the whole of reading. Because reading doesn't come naturally to children, the parts, especially the important parts that we refer to as the "big ideas," must be taught, and the teaching must be strategic, intentional, passionate, and an absolute priority.

BEGINNING READING: THREE BIG IDEAS

Big ideas represent perhaps the largest modification or shift in thinking for publishers, developers, and teachers. In a

period when teachers are forced to make instructional choices, big ideas provide guidelines about essential components of beginning reading programs. In beginning reading, big ideas are the unifying curriculum activities that enable learners to translate the alphabetic writing system into meaningful language. The research on beginning reading provides compelling evidence that the following three big ideas are fundamental and deserve considerable focus and attention in the early reading curriculum — *phonological awareness, alphabetic understanding,* and *automaticity with the code.* Students' learning disabilities and difficulties appear to be rooted in their difficulties in phonemic awareness, alphabetic understanding, and automaticity with the code. All three of these big ideas, in turn, influence vocabulary and comprehension. Each of these big ideas in beginning reading is reviewed briefly.

PHONOLOGICAL AWARENESS. A priority in beginning reading is to teach phonological awareness. Phonological awareness is the conscious awareness and knowledge that words are composed of separate sounds or phonemes, followed by the ability to manipulate sounds in words (Adams, 1990; Spector, 1995). Students who enter first grade with a wealth of phonological awareness are more successful readers than those who do not. Phonological awareness involves activities like the following:

- What is the first sound in rose?
- What is left if the /s/ sound is taken away from sat?
- What do you have if you put these sounds together: /c/, /a/, /t/?
- Say the sounds in the word sat: /sssssss/ /aaaaaaa/ /t/

In these activities, students do not see any written words or letters, but they listen and respond to what they hear. Ideally, children have phonological awareness before they begin formal schooling, but because many children do not, phonological awareness instruction must begin as early as possible. This instruction is obligatory, not optional, and must be explicit (Adams, 1990; Smith, Simmons, & Kameenui, in press). Teachers must use strategies that are conspicuous and make phonemes (sounds) prominent in children's attention and perception (i.e., teachers should model the sounds).

In a recent review of reading research, the role and relation of phonological awareness to beginning reading acquisition garnered convincing and converging evidence (Smith, Simmons & Kameenui, in press). Evidence derived from dozens of primary and secondary sources confirmed that children who are strong in phonological awareness usually learn to read more easily than children with delayed abilities (Juel, 1988; Smith et al., in press; Stanovich, 1986; Torgesen, Wagner, & Rashotte, 1994). Moreover, Smith et al. found converging evidence indicating that phonological awareness is (a) a complex process composed of many components; (b) a reliable predictor for later reading achievement; (c) causally related to reading development; and (d) successfully developed through instruction and practice. From this robust, foundational knowledge base, we ascertained that the ability to hear and manipulate sounds in language is a big idea and is key to early reading acquisition.

ALPHABETIC UNDERSTANDING. Children who are ready to begin reading words have developed the following prerequisite skills: They understand that (a) words can be "spoken" or "written," (b) print corresponds to speech, and (c) words are composed of phonemes (sounds) (i.e., phonological awareness). Another priority in beginning reading instruction is that children are taught the alphabetic principle (Perfetti & Zhang, 1996). This principle, which is often referred to as alphabetic understanding, establishes a clear link between a letter and a sound and involves the "mapping of print to speech." It requires a reader to understand that the elementary unit in the alphabetic writing system (graphemes or letters) corresponds to a meaningless speech segment (phoneme) until the two are combined to form words.

The research on word recognition is clear, widely accepted, and generally straightforward — reading comprehension and other higher-order reading activities depend on strong word-recognition skills (Chard et al., in press). To read words, a reader must see a word and access its meaning in memory. But to do this, the reader must:

(a) translate a word into its phonological counterpart — the word **sat** is translated into the individual phonemes, /s/, /a/, and /t/;

(b) remember the correct sequence of sounds;

(c) blend the sounds together; and

(d) search his or her memory for a real word that matches the string of sounds (/s/, /a/, and /t/).

Skillful readers do this so automatically and rapidly that it looks like the natural reading of whole words and not the sequential translation of letters into sounds and sounds into words.

AUTOMATICITY WITH THE CODE. As children begin to read words, it is crucial that they read these decodable words in passages and stories. Teaching phonological awareness, alphabetic understanding, and word recognition must be complemented with opportunities for students to (a) understand the utility of letter-sound correspondence knowledge and (b) develop fluency in applying this knowledge to reading text. Gaining automaticity in reading must also be given priority. This is best realized when children are given ample opportunity to read stories, passages, texts, or materials with a high percentage of decodable words in which the relation between print and meaning becomes clear. A decodable

word is one for which the student knows each letter-sound correspondence (alphabetic understanding) and can apply the appropriate blending skills.

Teachers should provide students frequent and repeated opportunities to read texts that contain a very high percentage of decodable words. This reading builds fluency and meaningful comprehension. More importantly, it demonstrates to the beginning reader the importance of gaining the meaning of words through accurate word reading. The benefit of reading passages frequently is further enhanced by passages that allow students to develop automaticity in word recognition and fluency with connected text. Fluent reading requires multiple opportunities for beginning readers to apply and develop their facility with word-recognition strategies, which leads to meaningful comprehension and the ability to read connected text. At this early stage of reading, it is important that children read materials that permit them to be successful in reading and understanding words, instead of text in which the words are too difficult, unfamiliar, or indecipherable.

Our intentional focus on the alphabetic writing system, phonological awareness, alphabetic understanding, and automaticity with the code does not diminish the importance of reading good literature to children in the early stages of learning to read. Providing children with generous opportunities to become engaged with literature, including reading stories to children and asking comprehension questions, is important to the full development of reading.

The development of skillful, mindful, and passionate reading takes time, but more importantly, it requires a simple yet uncompromising commitment to teaching reading in the early years. The development of readers also requires a serious and thoughtful understanding about the nature of reading and the complexities inherent in the learning and teaching of reading in the early years.

To read with ease, fluency, and comprehension as a young adult, and to sustain that level of reading as a productive citizen, requires that the teaching of reading be given top priority in the early grades in school, beginning with kindergarten. Additionally, it requires that all schools establish a goal of ensuring that all children are fluent, skillful, and mindful readers by the end of the third grade, which is generally considered the departure point for a child to make the transition from "learning to read" (i.e., learning how to read in an alphabetic writing system) to "reading to learn" (e.g., learning about physical science, social studies, biology).

Fortunately, the field of reading is at a point in its research and professional knowledge to ensure that beginning reading is successful. The field can also make clear and assertive statements about how to teach beginning reading, what to teach, when to teach it, and what conditions at home and school enhance reading literacy development. What we know allows us to teach reading in purposeful, strategic, and effective ways.

A School-wide Intervention Model (SIM): Features, Examples, and Contexts

Our objective in anchoring instructional change to the school building recognizes the multiple contexts that influence learning and the "fit" of each context to the whole of academic achievement in a school setting. We use the term model purposefully, as our intent is not to force fit our findings into a single intervention package but to allow teachers, administrators, and support staff of a school building to develop an "intervention model." This intervention should combine research-based practices and programs in ways that fit each school's host environment best.

In this section, we describe the School-wide Intervention Model (SIM), its role in improving school-wide reading achievement, and its specific application to reading in kindergarten through grade three. The SIM consists of five stages and combines four primary components: (a) dynamic assessment of "big ideas" or target-performance indicators, (b) research-based practices and procedures in beginning reading, (c) validated principles of effective curriculum and instruction, and (d) customized interventions in integrated contexts as the basis for reading improvement models that fit the host environment. A key feature of this model is the essential linkage of assessment and instruction. Though integrating assessment and intervention is not a novel concept and is indeed a signature of effective special education, what is innovative and effective about this process is the timely, strategic fit of the assessment measures, the targets of reading improvement (what to teach), and the intervention that has a high probability of improving reading (how to teach). This confluence of performance indicators and instructional intervention positions a school to (a) identify children early who are at risk of reading disability, (b) intervene strategically, and (c) modify instruction responsively in accord with learner performance.

Figure 3 depicts the SIM decision-making process. The process draws extensively on the work in reading assessment of Shinn (1997) and Kaminski & Good (1996) and combines their procedures for identifying, grouping, problem solving, and performance monitoring with Simmons and Kameenui's components of contextual interventions to reflect an integrated and comprehensive intervention model. We describe below each of the major stages and the applicable contexts.

STAGE I: ASSESS STUDENT PERFORMANCE USING DYNAMIC INDICATORS OF "BIG IDEAS"

The purpose of Stage I is to identify children who are at risk of reading disabilities or delay. Kaminski & Good (1996)

describe this first stage as *Problem Identification*. Using valid and reliable indicators of skills highly associated with early reading success, all children K-3 are screened with measures that correspond to the "big ideas" in beginning reading: phonemic awareness, alphabetic understanding, and automaticity with the code. Screening measures differ according to grade and learner performance, but all are highly predictive of subsequent reading success. For example, in kindergarten and first grade, Dynamic Indicators of Early Literacy Skills (DIBELS) (Kaminski & Good, 1998), which include onset recognition, phonemic segmentation, letter naming, and nonsense word reading, are used to identify children whose performance differs significantly from their same-age peers. Once students are able to read words in connected text (approximately mid-first grade through grade three), measures of oral reading fluency from curriculum-based passages are used as indicators of reading achievement (Shinn, 1997).

Students' performance on these indicators is then compared to performance expectations, or "where we would expect children to perform," to identify children at risk of reading disability or delay. Performance expectations may be derived from two sources: (a) local normative data or (b) performance associated with early reading success (Kaminski & Good, 1996).

In Mosenthal's contextual model, this stage integrates setting (school), task (specific reading measures), and learner (performance on critical indicators). This integrative model allows schools to examine learner performance not only at the individual level, but also at the school level to determine the magnitude of the problem. From this big-picture analysis, the scope and intensity of the intervention can be assessed. Schools can be better prepared to respond to children's needs proactively through early screening and identification. In Stage I, a centralized system of student-performance data is initiated and maintained at the school level to enable timely and informed decisions. This dynamic database and record-keeping system is a common feature of effective schools and is an essential feature of the SIM process.

Two points about dynamic indicators of big ideas are critical to this and subsequent stages of the process. First, the premise behind "big idea" indicators is that while these screening measures do not tell us everything about reading achievement, they serve as valid and reliable predictors of skills highly associated with later reading achievement. Deno (1992) describes such measures as indicators or "vital signs of growth in basic skills comparable to the vital signs of health used by physicians" (Deno, 1992, p. 6). Performance indicators provide fast and efficient indication of reading well being of students with respect to important reading skills (Kaminski & Good, 1998). Children who score significantly below their peers or in comparison to normative data on big idea indicators are considered at risk for later reading difficulty. An important feature of the dynamic indicators is that they are drawn directly from skills essential to successful performance in the general education curriculum. For example, the oral-reading fluency measure draws directly from passages in the general education curriculum and therefore allows the teacher to assess a learner's entry-level skills and growth. Assessment of each student is in relation to relevant materials and the progress of all learners in order to assess whether a student with disabilities is learning enough.

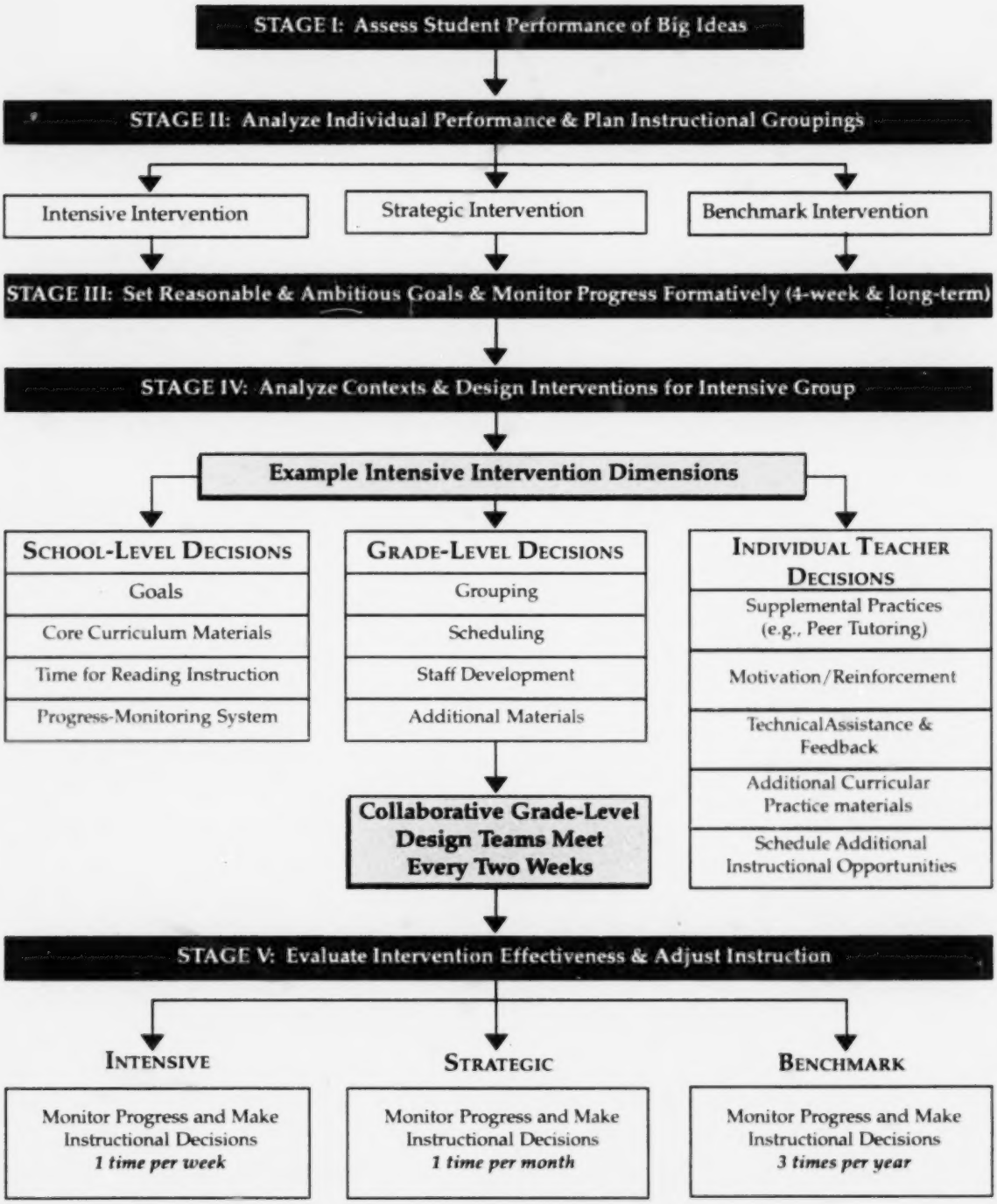
Second, the big idea indicators need to allow for "continuous evaluation" of students' literacy skills as they change over time. Kaminski and Good (1998) noted that assessment measures must be sensitive to changes in student performance to enable educators to assess the effects of intervention in a timely and formative manner. In addition, the measures must be easy to administer, capable of repeated and frequent administration, and time efficient and cost effective. The dynamic assessment of big idea indicators is a first step in the SIM process and remains critical across stages. A summary of sample performance indicators by grade follows:

Kindergarten:	Onset Recognition: *recognize first soundsinwords* Letter Naming Fluency: *name letters accurately and quickly*
First Grade:	Phonemic Segmentation: *produce phonemes in words (auditory)* Letter Naming Fluency: *name letters accurately and fluently* Nonsense Word Fluency: *produce letter-sound correspondences and use them to read words* Oral Reading Fluency: *read words in connected text quickly and correctly*
Second Grade:	Nonsense Word Fluency Oral Reading Fluency
Third Grade:	Oral Reading Fluency

STAGE II: ANALYZE INDIVIDUAL PERFORMANCE AND PLAN INSTRUCTIONAL GROUPS

Using normative information from performance indicators of "big ideas," individual student performance is analyzed to determine (a) the child's current level of performance and (b) other children who have similar performance profiles. To provide a context for this process, consider the following data. In a school of 320 students, the mean performance of 48 first-grade children was 14 phonemic segments per minute (range = 0-70) and 25 letter names correct per minute (range = 0-79). Based on previous research (Good, personal communication, August 28, 1997), first-grade children who are suc-

School-Wide Intervention Model


STAGE I: Assess Student Performance of Big Ideas
STAGE II: Analyze Individual Performance & Plan Instructional Groupings
Intensive Intervention
Strategic Intervention
Benchmark Intervention
STAGE III: Set Reasonable & Ambitious Goals & Monitor Progress Formatively (4-week & long-term)
STAGE IV: Analyze Contexts & Design Interventions for Intensive Group
Example Intensive Intervention Dimensions
SCHOOL-LEVEL DECISIONS
Goals
Core Curriculum Materials
Time for Reading Instruction
Progress-Monitoring System
GRADE-LEVEL DECISIONS
Grouping
Scheduling
Staff Development
Additional Materials
INDIVIDUAL TEACHER DECISIONS
Supplemental Practices (e.g., Peer Tutoring)
Motivation/Reinforcement
TechnicalAssistance & Feedback
Additional Curricular Practice materials
Schedule Additional Instructional Opportunities
Collaborative Grade-Level Design Teams Meet Every Two Weeks
STAGE V: Evaluate Intervention Effectiveness & Adjust Instruction
INTENSIVE
STRATEGIC
BENCHMARK
Monitor Progress and Make Instructional Decisions 1 time per week
Monitor Progress and Make Instructional Decisions 1 time per month
Monitor Progress and Make Instructional Decisions 3 times per year

cessful early readers can segment words into phonemes at a rate of 35-45 per minute and identify 50-70 letter names correctly per minute. Though the mean performance hints at the magnitude of the problem, only an examination of individual children's data reveals the scope of the problem revealed. Of the 48 children, 21 could segment no phonemes, and 13 could correctly identify fewer than 10 letter names correct in a minute.

Using a process developed by Shinn (1997), children's performance on big idea indicators and other information from teachers is used to perform "instructional triage"; that is, children who are at greatest risk are identified, as are children who are at some risk and children who are making adequate progress in early reading. To operationalize this process, we use the following criteria:

Intensive care students are those who are seriously at risk based on extremely low performance on one or more performance indicator. The greater the number of measures and the lower the performance, the greater the risk. In general, these children are performing more than 2 standard deviations below the mean on local norms or expected levels of performance.

Strategic students need systematic, strategic intervention and monitoring because of increased risk factors and low performance. Their performance, however, is not as low as students in the intensive group. In general, the performance of these children falls more than 1 standard deviation below the mean.

Benchmark students' performance seems to be on target on critical literacy skills, and these students are not considered at risk of reading delay, based on current performance.

Similar to children with serious medical conditions, children who are in need of intensive care in reading are in acute need of the most effective interventions available and require frequent monitoring to ensure that their reading performance does not remain seriously low. Educators must intervene with a sense of urgency. Strategic students are also at risk, but their condition is less acute than intensive care students. Nonetheless, strategic students require more carefully designed and delivered instruction than is typical of most classrooms. Shinn recommends monthly monitoring on critical reading indicators to evaluate these students' performance.

Once children's performance profiles are analyzed, children can be grouped according to reading performance in small homogeneous groups designed for strategic intervention for children with intensive needs. As a rule, the number of students in intensive groups should be smaller than either the strategic or benchmark groups. A word of caution is warranted regarding grouping. The purpose of grouping is to enable children to receive instruction that is more accurately aligned with the needs of the learner. Groups should remain dynamic, and strategic monitoring of performance provides a mechanism for adjusting groups in response to instruction and assessment.

The contexts involved in this Stage II include setting (school, classroom), task, learner, and teacher. The teacher ultimately examines individual student performance data and determines the composition of instructional groups. It is likely at this stage, however, that teachers within or between grades may want to examine the performance heterogeneity within their classrooms to determine how to optimize learning opportunities for students.

STAGE III: SET AMBITIOUS INSTRUCTIONAL GOALS AND MONITOR FORMATIVELY

The next stage of the School-wide Intervention Model involves using individual student performance to set four-week and long-term instructional goals. In early literacy, we have a reliable knowledge base to determine expected performance for early literacy success (Fuchs & Fuchs, 1994; Kaminski & Good, 1996; Hasbrouck & Tindal, 1992; Markell & Deno, 1997). For example, in second grade, children gain approximately 1.46 words correct per minute per week in oral reading fluency (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993), and students in the 50th percentile exit second grade reading approximately 90 correct words per minute (Hasbrouck & Tindal, 1992). Children who are successful early readers segment words (i.e., demonstrate phonemic awareness) at a rate of approximately 35-45 phonemes per minute. These levels of expected performance are critical as we develop goals for children whose early reading trajectories are less than adequate, and they serve an important function in the SIM process.

If necessary, goals are established for multiple measures and are monitored formatively. Shinn (1997) recommends weekly monitoring for children in the intensive-care group and monthly monitoring for students in the strategic group. All students in the grade are measured quarterly on critical performance indicators to determine their progress toward long-term goals. Using the first-grade children previously discussed, the mean of intensive-care children was 0 on phonemic segmentation, and 3 on letter-naming fluency. Using expected performance (i.e., 35-45 in phonemic segmentation) and a goal of achieving performance targets by mid-year (i.e., approximately 18 weeks), the weekly goal is calculated by dividing the target goal by the number of weeks in the intervention period. The 4-week goal is calculated by multiplying the weekly goal by four. To improve phonemic awareness for our intensive first-grade students, the weekly goal is two phonemic segments gained per minute and the 4-week goal is 8 segments per minute. Within 18 weeks, at a gain of 2 segments per minute, students should reach the

target 35 segments per minute. The same process is used for each target measure of reading.

STAGE IV: ANALYZE INTERVENTION CONTEXTS AND PRIORITIZE INTERVENTION DIMENSIONS

In Stages I-III, we set the context for what is arguably the most critical and complex stage of the SIM Process: Intervention. The stages of the process thus far have allowed us to answer the following questions:

- Which children are at greatest risk of early reading difficulty or disability?
- What is the magnitude of the problem?
- Which children need the most intensive intervention?

In Stage IV, the questions take on a different focus and include such queries as:

- What are the reading goals of the school?
- Is instructional priority allocated to the big ideas of phonological awareness, alphabetic understanding, and automaticity with the code?
- Does the assessment system of the school provide information to monitor students' progress?
- What is the teachers' current knowledge of effective reading practices, and how much staff development is necessary to support teachers?
- Is the primary reading curriculum program effective and research based?
- Are the instructional practices of general, special, and remedial (Title I) teachers aligned to optimize learner performance?

Stage IV activity focuses on the multiple contexts that must be considered when designing intervention and the importance of instructional fit with the host environment. Too often interventions fail because we have taken "Intervention A" and implemented it in "School B" with "Teachers C and D" without really understanding the fit between A, B, C, and D. A key difference of the SIM from other models is the focus of intervention that moves beyond the learner to the school, classroom, teacher, curriculum, materials, and tasks. Contextual analysis is coordinated by site-based coordinators in collaboration with grade-level intervention teams. Site-based coordinators are district- and school-based personnel who know the school context and will continue to work in the school for the duration of the process. In this process, grade-level teams work from a framework of research-based practices (e.g., specific curriculum, peer tutoring) and alterable variables (e.g., time, size of groups, concentration of low performers) to customize intervention models. The contexts and dimensions from which schools may "customize" models are displayed in Figure 4.

In the SIM, some decisions are made school wide for intensive children and some at the classroom and individual child level. At minimum, we recommend that the following dimensions be established as the "core" intervention features for an entire school building:

(a) redefine and set reading, vocabulary, and mathematics achievement goals;

(b) use curriculum programs based on validated research principles;

(c) set a minimum of 45 minutes of reading/vocabulary instruction and 30 minutes of mathematics instruction per day for students with disabilities or at risk of academic learning problems; and

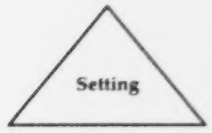
(d) institute a centralized system of student achievement data collection.

For example, in the first-grade classes we profiled earlier, reading delay was not restricted to first grade. Approximately 40% of all students in grades K-3 fell in the intensive care group. As a school, the faculty made several decisions that changed practice school wide (see School Context of the Conceptual Model). First, the faculty prioritized reading as the primary instructional focus for the year and set realistic and ambitious achievement goals for intensive and strategic students. Reading time was considered sacred, and all personnel (e.g., Title, administration, general educators, special educators, music) were involved in the school's intervention plan. A centralized system for reading achievement data collection was instituted, and secretarial time was allocated for entering and maintaining the database. The context in these decisions was the setting (school, classroom).

Next, all grade K-3 staff was debriefed on research-based principles of effective reading instruction. They reviewed several basal (i.e., Open Court, Reading Mastery) and supplemental reading programs (e.g., Phonemic Awareness for Young Children, Ladders to Literacy, Read Naturally) to determine the one that best fit the needs of their learners and the resources of their classrooms. All staff in the school received staff development on curriculum implementation and frequent technical assistance.

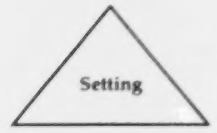
These "school-level" intervention dimensions were then extended at each grade level. Grade-level teams currently meet every other week to decide how to find more time for intensive students, how to regroup within grade to create more homogeneous groups, how to design and share lesson plans, and how to chart and report student performance progress. At the individual level, teachers make further decisions regarding how to supplement instructional opportunity for students at risk of reading disability or delay. Some teachers engage students in classwide peer tutoring, while others select from additional research-based practices to augment instructional opportunity.

DIMENSIONS OF INTERVENTION MODELS



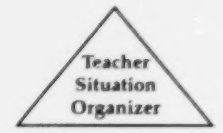
Schools

- Redefine and set reading, vocabulary, and mathematics achievement goals.
- Set minimum time for reading, vocabulary, and mathematics instruction.
- Institute centralized system of student achievement data collection and use.
- Use curriculum progress based on validated principles.
- Reorganize staff (general education, special education, Title) to provide intensive and aligned interventions.
- Examine student performance data to reduce concentration of low performers in a given room.
- Establish "achievement teams" and allocate planning time to address subject-matter priorities.

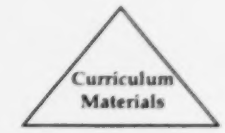


Classroom

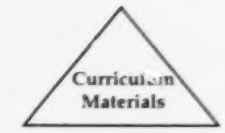
- Prioritize reading, vocabulary, mathematics instructional time.
- Reduce size of instructional groups for low performers.
- Schedule "extra" period of reading, vocabulary, mathematics instruction.
- Use cross-class or grade grouping to create homogenous groups.
- Coordinate instructional delivery with support personnel.



- Provide staff development for teachers in intervention components.
- Use validated peer-mediated program to supplement teacher-directed instruction (e.g., classwide peer tutoring, cooperative learning).
- Set up access to research-based information through websites.
- Institute common planning times for professional support.



- Examine quality of core curricular programs to determine whether to:
  1) replace core
  2) supplement core.
- Increase availability of materials that allow students to practice (e.g., Read Naturally, appropriate reading and mathematics materials).



- Institute progress monitoring to document growth over time.
- Review curricular tasks and focus on "big ideas."
- Define clear task expectations.

In this model, some interventions are standard across all grades and classrooms within the school, while other interventions are discretionary. At every stage of the intervention definition process, collaborative teams construct or customize the intervention from a menu of validated options. It is this customization or "fit" within the school that further distinguishes the SIM from more traditional translations of research into practice.

Once intervention components are finalized, dimensions are implemented for four-week periods and adjusted based on learner performance. All factors and adjustments within contexts are documented to evaluate the effectiveness of site-based models.

STAGE V: EVALUATE INTERVENTIONS FORMATIVELY AND MAKE INSTRUCTIONAL ADJUSTMENTS

In this final stage of the SIM process, we illustrate the critical linkage between assessment and instruction. Using student performance on big ideas indicators collected weekly for intensive students and monthly for strategic students, progress toward goals is evaluated to determine if the rate of progress is adequate to achieve established goals and eliminate risk of long-term reading difficulty. In essence, we address the questions: Is the student's current rate of progress sufficient to close the gap, and is the rate sufficient so the student will learn enough to be on a positive trajectory toward reading success?

SUMMARY OF MODEL

For children with reading disabilities or at risk of serious reading difficulty, the SIM is a data-based model for determining: (a) who to target for intervention, (b) the magnitude of the problem, (c) the amount of growth necessary to change early reading trajectories, (d) essential dimensions of intervention and their contextual fit, (e) the effectiveness of intervention, and (f) whether children are "learning enough" (Carnine, 1997). Based on the methodological integration of knowledge from general and special education research in assessment (e.g., Deno, 1992; Kaminski & Good, 1996; Shinn, 1997), together with effective instructional design principles (Kameenui & Carnine, 1998), validated methods of early reading instruction (Simmons & Kameenui, in press), and intervention models that fit the host environment (Sugai & Horner, in press), the SIM model can be used to intercept and prevent early reading risk from becoming long-term and intractable.

Conclusion

If the widespread call to educate "all" children (e.g., Goals 2000) is to be taken seriously and not viewed as just another slogan in which "the rhetoric" of educating "all" is in effect the reality of educating "some" or even most (Kameenui, in press), then we face enormous challenges. Perhaps the most important challenge is that of setting instructional priorities (e.g., beginning reading should be the top priority for primary and elementary schools), making the commitment to focus relentlessly and strategically on the priorities, and implementing a data-based intervention model (e.g., SIM — School-wide Intervention Model) that provides a formative and continuous feedback loop about student performance. Finally, the intervention model must be embraced and conceptualized as a "primary" program of prevention and intervention from the very outset, and with specific contexts and host environments in mind. Only then will educating all children become a reality.

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